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UNITED STATES NAVY
Medical News Letter

Vol. 45 Friday, 29 January 1965 No. 2

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United States Navy

MEDICAL NEWS LETTER

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

FRONT COVER: The United States Naval Hospital, Portsmouth, Virginia, located on the Elizabeth River across from Norfolk, is the second largest naval hospital on the basis of patient load and clinical material available.

The Portsmouth-Norfolk area is the home port of a large part of the Atlantic Fleet, of the Atlantic Air Wing, Amphibious Forces and Fleet Marine Force, Atlantic, with a resulting large population of Navy and Marine families. The hospital serves as the support activity for these and other Armed Forces installations in the area, maintaining an average census of 1000 patients of all age groups, both sexes.

The daily average occupied beds is 1,103. Special treatment facilities of the hospital include Thoracic Surgery, Plastic Surgery, Neurosurgery, Vascular Surgery, Deep X-ray, Radium, Oncology and Cardiopulmonary function.

The new 15 story, air-conditioned hospital building was commissioned on 22 April 1960. The original building was the first naval hospital commissioned in (1827) and its history reflects that it was taken by the Confederates on 20 April 1862 and retaken by the Union on 10 May 1862. Completely renovated between 1907 and 1909, and temporary buildings added during World War II, it served until the new construction was completed in 1960.—Editor.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

EVERYONE SHOULD BE CONCERNED WITH DRUG SAFETY *

By Dale G. Friend MD, Journal of the American Pharmaceutical Assn., NS4(11): 528–530, November 1964.

In any discussion concerning drug safety it is important to stress at the very outset that there is no absolutely safe drug. Hazard in the use of drugs varies from a reaction which may occur once in 8,000 to 10,000 patients to one which has an incidence of untoward effects in as high as 50 percent or more of the patients receiving the drug. Society for the most part has justifiably become concerned with drug safety only in the past 25 years or less. Prior to this time there were few potent therapeutic agents available and these for the most part had been studied very carefully and were understood thoroughly by everybody handling them. Consequently, few untoward effects resulted from their use.

Although considerable hysteria has been generated concerning drug safety, especially within the past two years following the thalidomide tragedy, there is nevertheless sound ground for concern with drug safety on the part of everyone. After Osler and other medical and pharmaceutical leaders in the first decade of this century removed from the *United States Pharmacopeia* the many useless concoctions or weak acting agents which had been inherited from the previous century, a period of comparative therapeutic nihilism resulted.

It is most certainly true that during the two decades following this, the people training physicians for the most part took a very dim view concerning the use of drugs in the treatment of disease. Much of this skepticism was justified since there were very few effective substances available. As a consequence therapeutics as such lost much of the importance it formerly held.

During this time many departments of therapeutics and professors of therapeutics were dropped from medical schools. The activities formerly carried on by the professor of therapeutics were taken over by the new professor of pharmacology and clinical physicians. Therefore, the medical world for the most part was unprepared for the therapeutic advances that were to come beginning with the sulfonamides in 1935 followed by penicillin and then a host of many agents for the treatment of many different medical conditions. These new agents were not only exceedingly potent materials but often times were capable of bringing about considerable amelioration in the disease for which they were designed. Unfortunately, the advent of such potent substances for the most part found the medical profession not equipped to handle and understand them as well as it might have been because of the previous period of therapeutic nihilism.

During the first quarter of this century most iatrogenic disease resulted from surgical mishaps but with the release of numerous potent agents, iatrogenic disease became mainly a problem for the physician prescribing drugs. It is conservatively estimated that over a million so-called iatrogenic reactions occur each year.

It is apparent that the tide of new synthetic preparations is going to continue and may even become greater as chemists, pharmacists, physiologists, pharmacologists and physicians develop more information and skill in the field and devise better technics for screening and developing drugs. It is, therefore, imperative that we all become concerned with the safety of these agents which are now making such an impact on our society. At the present time drugs available for use are divided into two categories—those which are made available only through the prescription of a physician and those agents which are available through over-the-counter purchases.

Prescription Drugs

The pharmaceutical industry at the present time with only minor exceptions, has developed a great deal of knowhow in the preparation of drugs so as to insure the stability, purity and reliability of their products. The excellent work done by the Food and Drug Administration to insure purity in food and drugs has borne fruit and no sensible manufacturer would release imperfect or impure agents for use. Furthermore, manufacturing controls have become much more effective. The pharmaceutical industry can take great pride in its achievements in insuring that its products have the type of purity and stability needed for use in man.

Once a new synthetic chemical has been purified and is in a form stable enough to be the same under all conditions necessary in a study, it is given to the pharmacologist, a highly trained scientist working in

* Presented at the joint special session of APhA, ASHP, NABP and Secretaries Conference at the annual meeting of the American Pharmaceutical Association in New York City, August 4, 1964.

the pharmaceutical manufacturer's laboratory. He secures a vast amount of data concerning its pharmacological action. By carrying on studies in several species of animals the pharmacologist obtains a great deal of information concerning action and toxicity. After this initial work has been done, the agent, if it shows sufficient promise, is submitted to the clinical investigator who then secures data concerning its action and toxicity in man. After it has been studied by the clinical investigator who, in a limited number of patients finds it satisfactory for use in medicine, the drug is supplied to many physicians for further study and evaluation.

After these investigators have completed their studies, this data, with the information obtained by the pharmaceutical manufacturer, is taken into consideration by the Food and Drug Administration. If the drug shows satisfactory efficacy, the question becomes one of determining its safety in reference to its therapeutic use. At the present time the scientific community is still working out methods of approach to this problem. For example, if a drug is effective but highly toxic, consideration must be given as to whether it has sufficient merit to release it for general use. Usually if the drug is effective and it may prolong or actually save, life in a situation where there are no other agents of equal effectiveness, then even a high degree of toxicity can be tolerated. However, if the drug is another in a long series of agents used for supportive treatment, such as the relief of pain, sedation or tranquilization, any degree of toxicity above what is already present in available drugs would lead scientists to feel that the drug probably has limited merit.

Although the pharmacologist, clinical investigator and physicians studying the drug have secured a vast amount of information about it and usually have a good idea of its toxicity, there is always the possibility of some unsuspected toxic property occurring even after the drug has been released by the Food and Drug Administration. It is, therefore, absolutely essential that physicians constantly be alert for such actions.

The pharmacist also has an important role in this chain because once the physician writes a prescription order for the drug, the pharmacist generally is the last professional practitioner to have contact with the patient before the prescribed medication is consumed. Pharmacists from time immemorial have checked and rechecked to be sure that everything is exactly correct before a drug is dispensed. This last check is so essential that no prescription drug should ever be given to a patient without having passed through the hands of a skilled pharmacist.

Finally, the patient must co-operate if the maximum benefit with the minimum amount of danger is to be secured from the medication used. Instructions written by the physician should be explicit and the patient should know of possible hazards. Certainly patients should be warned to inform their physician or pharmacist of the slightest indication of anything unusual about the drug's action in the treatment of their condition. Unfortunately in our modern society at this stage our carefully designed chain of information often breaks down. In a study made several years ago on patients receiving medicines from the out-patient department of the Peter Bent Brigham hospital, it was found that approximately 50 percent exhibited some error in their medication, although physicians were confident that the patients had been instructed properly and they were doing as directed. It was indeed a shock to all concerned to find patients eating suppositories, taking medicines in the wrong manner, confusing their medicines entirely or using drugs that had been prescribed previously.

There are certain rules that I have made a principle of using in my practice of medicine to promote the highest degree of safety. First, I never prescribe a drug unless it is absolutely needed. Second, I continue the drug only long enough to secure the therapeutic effect desired and stop it as soon as possible. The continuation of any medication over long periods of time increases the hazards of a drug reaction. Whenever possible, mixtures of drugs are avoided because oftentimes these preparations lead to complications when reactions occur since no one knows exactly what drug is causing the trouble. Furthermore, it is often impossible to treat the patient intelligently and skillfully if three or more ingredients are involved in the titration of the dose to the patient's need.

Patients are warned to report immediately any unusual happenings during the time they are taking the drug and their responses to the drug are followed closely during the adjustment of the dosage in order that any early toxic signs can be detected promptly and harm prevented. The label affixed to the container of prescribed medication provides precise instructions but whenever complicated instructions make such labeling impossible, the prescriber writes out these instructions on separate prescription blanks so that the patient can refer to them as needed to refresh his memory.

It is imperative in modern-day usage of potent drugs that patients thoroughly understand instructions physicians are giving to them. Providing such understanding takes time and effort on the part of the physician but it can be richly rewarding. The name of the drug should be given to the patient by the prescriber and all medication thus prescribed should contain the name of the agent, the dose and instructions on the container. The amount of drug prescribed should be restricted to the needs of the patient for a short term interval since over-prescribing is not only costly to the patient in that he pays for drugs he does not use, but also hazardous to him and his family in that the excess remains in

the medicine cabinet. Oftentimes a patient may consider that since a drug, which helped him under certain circumstances is available, it can be used to help him under new circumstances.

Over-the-counter drugs

Over-the-counter drugs are agents which have been deemed of sufficient general value and of such limited degree of toxicity that they can be made available for direct purchase by a patient. This class of drugs supplies an important human need because all mankind deems it an inherent right to take medicines on his own initiative. That this urge has existed from ancient time has been proved in innumerable situations. Up until about the turn of this century such self-medication led to very little harm since most concoctions consisted of various types of herbs with very limited or no pharmacological action. However the advent of synthetic preparations such as the analgesics, sedatives and more recently the antihistamines and sympathomimetic amines has placed in the hands of the layman many potent and at times toxic substances for self-medication.

Unquestionably there is far more self-medication now than ever existed in our grandparents' day and, as a consequence, a great deal more toxicity is also occurring, much of which does not reach the medical literature or is very ill-understood even by physicians themselves. Any wise physician who has good knowledge of drug action knows that patients taking antihistamines get skin reactions, abnormal cardiac action, over-sedation and at times mental excitement. Toxic effects are being observed with many of the commonly used analgesics, anticold preparations and numerous other over-the-counter remedies. Formerly when these agents were sold in the pharmacy only, the pharmacist, a highly trained scientist who knew drug action and who quite frequently knew and oftentimes was on very friendly terms with those who procured drugs from him, was able to warn the individual. In this way the pharmacist exerted a potent public health action in preventing or ameliorating the toxic effects to drugs. This safety control unfortunately was lost when many of these over-the-counter preparations were placed in supermarkets, restaurants and other places where individuals could purchase them without any possibility of receiving expert advice. In view of the present trend of widespread advertising urging the public to self-medication, it may well be necessary in the public health interest to exert a much more stringent selection of drugs released for complete and uncontrolled use by the lay public.

There has always existed many inherent dangers in self-medication. Physicians are all aware of the hazards of such practices whereby the real diagnosis of disease is delayed or its symptoms are masked until serious progression has taken place which may lead to the individual's losing his life. However, the medical world has long recognized that it is impossible to control this fundamental urge of all people to dose themselves with many different types of concoctions and therefore they have taken the position that everything should be done to protect the individual from himself.

It may be necessary as has been suggested by certain pharmaceutical groups to define and recognize different categories of drugs. For example, the usual prescription item under very careful control of the physician and pharmacist would remain in its present status. For drugs in which certain toxic properties and possibilities for harm exist to a low degree, an intermediate group would be established which could be obtained only in pharmacies where a highly trained pharmacist with a definite knowledge of the drug's action and its possible toxic effects could release the drug directly to the public. Finally, a third category of comparatively harmless substances would be indicated which could be sold in supermarkets, restaurants and other places.

In conclusion, drug safety is everyone's business—the manufacturer, Food and Drug Administration, physician, pharmacist and public in general. The more sensible information we can make available to the public concerning a drug's toxicity and methods to overcome it, the better.

PREVENTION OF MENTAL ILLNESS

A seminar on public health practice and the prevention of mental illness was held in London from 6 to 17 July 1964 by the WHO Regional Office for Europe, in cooperation with the Government of the United Kingdom. It discussed the role of the public health and mental health services in the prevention of mental disorders, with special emphasis on services administered and operated by public health personnel, including maternal and child health centres, school and university health services, and services for the elderly. The theory and practice of general preventive measures, including the health education of the public with regard to mental health and the preventive role of the visiting nurse, were also reviewed.

The participants in the seminar included public health administrators, general practitioners, paedriatricians, public health nurses, and mental health staff.—WHO Chronicle 18(8): 310, August 1964.

HEAT ILLNESS AND RELATED PROBLEMS*

A. W. El Halawani MD, Saudi Arabia, World Health Organization, WHO Chronicle 18(8): 288–298, August 1964.

THE PREVENTION OF HEAT DISORDERS

Although much more research is required before our understanding of the heat disorders is optimal, the practical application of existing knowledge can greatly reduce the incidence of the heat disorders in any previously uncontrolled situation. The basic approach is to some extent dictated by the circumstances in question; for example, it is usual to limit human activities in outdoor heat, and to adjust indoor environments to within the limits of safety even for strenuous work or exercise. If an indoor (usually industrial) environment cannot be modified in this way, then it is necessary to limit the rate or duration of work or to provide those concerned with suitable insulation, barrier shields against radiant heat, ventilated suits, or similar forms of protection. Cool and well-ventilated resting quarters, and an adequate supply of palatable drinking fluids are immensely important. However, a real attempt to make people limit their activities in daily peak heat periods is always desirable.

The first step is to identify the circumstances in which the heat disorders are known or can be expected to occur, and to gather the climatic data concerned in a way that makes possible the application of one or other of the arbitrary indices of heat stress. Procedure thereafter is best illustrated by the use of the WBGT index in reducing the incidence of heat casualties among US Marine recruits at Parris Island. A yellow flag was raised when the WBGT index reached or exceeded 85, and indicated that drill or other strenuous activities should be discontinued by recruits or reserve trainees in their first two weeks of training; a red flag, hoisted when the WBGT index reached or exceeded 88, indicated cessation of drill and other strenuous activities by all trainees, regardless of their state of acclimatization. In addition, the breaking-in of new recruits was accomplished by graduated intensity of physical conditioning exercises during the first week and thereafter, and by limiting infantry drill to one and a quarter hours per day for the first week, with five-minute breaks after each 30 minutes of drill. After the first week as many as four hours of drill per day were permitted. These regulations brought a significant reduction in heat casualties from the summer of 1955 to the summer of 1956, despite the fact that in 1956 the climatic conditions were more severe and many more hours were spent at drill. It would be difficult to implement graduated intensity of physical effort by Mecca pilgrims during their acclimatization period; but the use of a flag as described previously, combined with appropriate advice on Pilgrimage activities in relation to location, acclimatization, and age, seems worth trying.

Although it has been admitted that generalizations about water and salt requirements in hot surroundings are hazardous, informed assumptions are in practice often desirable and occasionally unavoidable. Fluid requirements are such as will prevent or alleviate thirst, protect therefore against clinically significant water-depletion, and maintain—whatever the circumstances—an individual daily (24-hour) urine output of not less than 600 ml. Provided that the population at risk is of fairly uniform composition and habits, it is possible to derive a reasonably accurate estimate of the requirements, if the sweat losses due to various activities are measured in a sample group at different periods of the day; but in a mass gathering such as the Mecca Pilgrimage, a more realistic approach would be to check fluid intakes against urine outputs in representative groups of travelers. Owing to the practical difficulties of such an investigation, it might be preferable to assume that at least eight litres per head of potable fluid daily will be needed. It should be borne in mind that this figure is not related to the needs of one or other specific individual, is intended to allow for the health of unacclimatized personnel even in severe outdoor heat, and has nothing to do with requirements for survival. It is also worth making the point that pilgrims who are accustomed by necessity to a very much smaller intake and respond to an abundance of potable fluids by drinking large quantities may be liable to sodium depletion.

It is significant that the Saudi Arabian Government has provided not only water at frequent intervals along the routes followed by the pilgrims, but also chilled water in the situations where heat casualties are prevalent, for fluids must be palatably cool if they are to be taken in quantities sufficient to combat voluntary dehydration. In an interesting field experiment in Israel one August—discussed in the technical discussions at the twelfth session of the WHO Regional Committee for the Eastern Mediterranean—a large variety of chilled and unchilled drinks, including water, milk, lemonade, and beer, were offered to soldiers marching 27 km daily for 24 days, carrying individual packs weighing 16 kg. The men preferred citrus-flavoured water at a temperature of 10°C to 15°C (50°F to 59°F), and drank this in amounts adequate to replace sweat losses of 5-10 litres daily.

According to current knowledge, unacclimatized men who have a short-term and specific job to do almost from the moment of entry into hot countries may require initially a total salt intake of 15-20 g daily, depending on their previous salt intake, the amount of exercise undertaken, and the degrees of climatic heat prevailing. This would mean daily supplements of 5-10 g of salt to a European-style diet, with a gradual reduction to preheat levels of intake over the course of the first three weeks or so in the heat. The accustomed daily level of salt intake should be selectively maintained if food intake is reduced by short supply or loss of appetite; and extra salt is required in the presence of diarrhoea. Finally, no extra salt should be taken when water is in short supply. The recommendation of an initial salt intake of 15-20 g is not applicable to Mecca pilgrims, however, unless salt depletion is known to be one of the heat disorders encountered on the Pilgrimage. In cases of known salt depletion, the practical issue arises of how those concerned can best take the extra salt. Bread, soup, and tomato juice are good vehicles, and drinking water remains palatable to most people when it contains sodium chloride in a concentration of 500 to 1000 parts per million (ppm); some desert Arabs tolerate brackish water containing salt in concentrations up to 8000 ppm. Salt tablets should be avoided if possible, since there is a tendency to attribute almost mystic properties to them, and this can be harmful as well as beneficial. If they must be used, enteric sugar-coated tablets containing 0.65 g of salt are as good as any, for they are big enough to limit the number of tablets required, without being too big to dissolve and are therefore passed through largely unchanged in diarrhoea.

Protection against radiant heat from the sun is of considerable importance to the Mecca pilgrims, so the decisions to provide the path round the Kaaba with a canvas canopy and to shade the Masaa are of value. The heat by radiation from full sunlight may be as much as 250 kcal/h, but white clothing will reflect the energy of the shorter wavelengths and thereby reduce the solar heat load by as much as 50%, and the provision of a canopy with a sufficiently high space overhead to allow free ventilation (to avoid an increase in air temperature) can reduce the remaining solar heat load to relatively small proportions. Inadequate ventilation is presumably the main reason why temperatures inside tents in Mena and Arafat were 5°C higher than in open shade near by. It is immensely important that plans for the housing of pilgrims in Mecca, presumably (for financial reasons) in buildings without air-cooling systems, be soundly based on modern concepts of architectural bioclimatology. This aspect of hot-climate housing has received increasing attention in the building research stations in Durban, Watford (England), and elsewhere, and in the School of Public Health and Tropical Medicine in Sydney. Much can be done to limit indoor temperatures by making the best possible use of natural ventilation, and by providing external reflective or absorptive shields against solar radiation. Temperatures can be reduced even inside motor cars or buses if their roofs are painted white.

The remaining approach, in circumstances in which protection can at best be incomplete and the application of a heat stress index to the control of strenuous activities unsatisfactory, is to take all possible steps to tell the people concerned how to behave in high surrounding temperatures. A former chief medical officer of the Kuwait Oil Co. successfully used this method for ship's crews at Mina-al-Ahmadi; pamphlets on the subject in several different languages were issued each summer to seamen arriving at the port, and a short documentary film was recently produced for showing in a recreation hall on the pier. For travellers to Mecca, coloured posters along the lines adopted by the medical department of the Arabian-American Oil Co. and radio commentaries on the subject seem suitable additions to pamphlets.

SOME ASPECTS OF HEAT STROKE TREATMENT

It seems likely that, even when all possible control measures have been adopted, heat illness in any naturally hot climate will have been reduced but not eradicated. Therefore, wherever the disorders are known to occur, there should be efficient facilities for the speedy reception and treatment of patients. Patients with any of the known heat disorders benefit by being placed in a cool environment, and therefore field clinics, ambulances, and hospital reception and treatment rooms should all be supplied with air-cooling units. Treatment centers should also be strategically placed, These comments are particularly relevant to heat stroke, for if patients suffering from this disorder can be properly received within minutes or at most an hour of their collapse treatment is relatively easy and the

prognosis is good. On the other hand, no amount of equipment, experience, or skill can keep down the death rate in patients who have been in hyperpyrexia and coma for several hours before reaching medical aid.

A method of effective cooling should be employed immediately after a diagnosis of heat stroke has been made. Cooling is effective if the rectal temperature is reduced to 38.9°C (102°F) within one hour, regardless of the degree of hyperpyrexia present at the outset. This does not imply that effective cooling always saves the patient, or that less rapid cooling is incompatible with survival; the time schedule is simply one that experience has shown to be desirable. There is some controversy over the methods by which such rapid cooling can be achieved. There are really only two ways of doing it. The first is to use the slatted heat stroke treatment table designed in Kuwait and now coming into wider use in the Eastern Mediterranean Region; the stripped, unconscious patient is laid on the table and sprayed from above and below with water chilled to about 7°C (44.6°F); the room in which the table is housed is air-conditioned and supplied with powerful fans so that the patient is exposed to a current of dry air. Cooling, which is by convection and evaporation, is stopped when the rectal temperature reaches 38.9°C (102°F). The second method, favoured for many years in the USA, is to place the stripped and unconscious patient in a tub or bath filled with ice chips and water and massage the limbs and trunk throughout cooling; the patient is transferred to bed in a cool room when the rectal temperature has reached 38.9°C (102°F).

A criticism commonly directed at these methods, and particularly at the first, is that they require facilities not readily available in the circumstances in which heat stroke may occur. The only reason why they should not be available in climatic conditions where the hazard is constant is a financial one. It is of course more difficult to provide chilled water and air-conditioned treatment rooms for itinerant communities, but by incorporating all the facilities of the heat stroke treatment table in a caravan trailer the Bahrein Petroleum Co. have shown that it is possible. If heat stroke occurs in an unexpected situation and in the absence of prepared facilities, then the most valuable method of cooling is to wrap the patient in a wet sheet and to provide as much air movement as possible to promote evaporative heat loss; but according to the recorded experience of two groups of observers there is no question of this technique being as good as the ice bath in terms of rapidity of cooling. A more fundamental criticism is that by employing ice, or nearly ice-cold water, the first two methods cause peripheral vasoconstriction and shivering and struggling even in heat stroke patients; and since these responses impede cooling they are regarded by some authorities as serious disadvantages. More significantly still, it is argued that placing the patient in a medium close to freezing point might result in a dangerous state of shock.

The essence of the question is therefore whether or not rapid cooling, by however drastic a method, offers a better prognosis than does the clearly innocuous and less dramatic wet-sheet and tepid-sponging techniques; and the evidence is that it does. Medical shock does not appear to follow the application of ice or ice-cold water to unconscious and hyperpyrexic patients, provided that cooling is stopped before the rectal temperature falls below 38.9°C (102°F) or thereabouts. Vaso-constriction and shivering do not in practice interfere with rapid cooling to any significant degree; and in any case they may be countered to some extent by the prior administration of chlorpromazine, which is now of established value in the treatment of heat stroke. Clinical experience might justifiably be criticized as being not sufficiently objective, particularly in view of the urgent life-or-death nature of the disorder. One experiment has been attempted in order to settle the problem, and naturally it was performed within the limits of human safety; the subjects were therefore neither anhidrotic nor comatose and rectal temperatures did not exceed 40.2°C (104.4°F), so that unfortunately there is no reason to believe that the results of the different methods of cooling employed have any relevance to the treatment of heat stroke. It remains to say that the question has been raised recently of whether chlorpromazine might serve, not as an adjunct to cooling, but in place of it. One case of heat stroke has been reported in which chlorpromazine and dipyrone (drugs with synergist hypothermic actions) were used successfully without concomitant cryotherapy; however, since the treatment included the application of wet towels and intermittent sponging with tap water, and since the patient concerned was received within minutes of collapse and the recognition of hyperpyrexia, judgment on this particular issue must be deferred.

Not for well over a decade will the Mecca Pilgrimage again coincide with the fierce summer temperatures of the area and therefore with the highest local morbidity and mortality rates for heat illness. This should be taken as an opportunity for methodical study of the problems concerned and not for procrastination. The pressing needs appear to be for strategically placed biochemical and climatological units by which the types of heat disorder that occur and the environmental conditions concerned are all precisely identified. An opportunity exists of testing the applicability to the situation of one or other of the arbitrary indices of heat stress, and possibly also of defining the incidence of the heat disorders in terms of a new scale.

Research is required, especially into the pathogenesis of heat stroke, prickly heat, and anhidrotic heat exhaustion (if the latter disorder affects pilgrims). The anhidrosis of heat stroke requires re-examination and

proper definition. Knowledge of water and electrolyte balance in conditions involving exposure to heat is less than in many other medical conditions, particularly with regard to potassium metabolism and requirements. The diverse origins and composition of the pilgrims, their enormous numbers, the procedures with which they all comply and the environmental conditions to which they are all exposed, afford a unique opportunity for studying the influence of factors such as age, race, and sex on thermoregulation and the incidence of heat casualties. For that matter, the pattern of heat illness in outdoor climates has never been followed by any one group of observers for more than two or three consecutive seasons.

* Continued from Volume 45, No. 1, 15 January 1965. This is the third and final installment.

FROM THE NOTE BOOK

Navy Studies Correlation of Inheritance and Behavior With Brain Microanatomy. Dr. Jose Delgado, who has been studying neurophysiological mechanisms on contract for the Office of Naval Research, particularly as related to behavior and drug action, has been collaborating on studies at Madrid University and Cajal Institute of Neuroanatomy, Spain. Because of his techniques for stimulating emotional responses in animals by broadcasting signals to electrodes implanted in various parts of the animal's brain, Dr. Delgado attracted the interest of the scientific community.

One collaborative study deals with the neurophysiological basis for the inheritance of aggressive behavior. The study is being concluded on a strain of "brave" bulls especially bred for bullfights. Using his special radio telemetry system, Dr. Delgado and his colleagues have been able to stop a "brave" bull charging at full speed in a bull ring almost instantaneously in his tracks by stimulating a specific area of the brain. Further, the bull lost his aggressive characteristics. Dr. Delgado's responsibilities in this study involve the correlation of behavior with the specific microscopic anatomy of the brain area that was stimulated. He hopes to apply these techniques of telemetered brain stimulation to the treatment of humans suffering from brain diseases such as epilepsy.—From Office of Naval Research, Washington, D. C.

NURSE RECEIVES SUPERIOR PERFORMANCE AWARD

The first Sustained Superior Performance Award to be granted to a Civil Service Employee at the U.S. Naval Auxiliary Air Station, Meridian, Miss., has been presented to Mrs. Vivian Lightsey, Registered Nurse attached to the station's medical department. The award, in the form of a check, was presented by the Commanding Officer, CAPT J. W. Williams, Jr., on the recommendation of the Senior Medical Officer, CAPT Howard W. Hill, with the approval of the Civil Service Rating Board.

Mrs. Lightsey has been assigned to the dependents' patient clinic at the air station since November 13, 1961, and has been the only nurse assigned since November, 1963. This clinic is visited by approximately 10,000 outpatients per year in addition to all immunizations given to the local service community.

Mrs. Lightsey is a resident of Daleville, Miss., and has held nursing positions in both Lauderdale and Kemper Counties in Mississippi.—From Service Information Office, NAAS, Meridian, Miss., 18 Nov 1964.

SLIDES, FILMS AVAILABLE

The following slide sets are available on a two-week loan basis to MILITARY or FEDERAL agency personnel, from the Medical Illustration Service, Armed Forces Institute of Pathology.

The Coombs Test, Part I—Clinical Medicine, consisting of 51 lantern slides, with 4 sets available for loan.

L–6864 Malacoplakia of the Urinary Tract, consisting of 50 lanterna slides, with 5 sets available for loan.

The following films were recently included in the AFIP Audio-Visual Communication Center.

AFIP–150	Epidemic of Histoplasmosis, color, 17 min.
PMF 5381	Temporary Plastic Bridge, color, 19 min.
MF 8–5104	The Larynx and Voice-Physiology of the Larynx Under Daily Stress, Color, 24 min.

MF 8–5105 The Larynx and Voice—The Function of the Normal Larynx, color, 22 min.

AFIP–151 Modern Tissue Processing, color, 24 min.

CHLORAMPHENICOL
Fatal Aplastic Anemia

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An epidemiological study was carried out at the request of the California State Legislature because of concern with potential hazards to the public health from chloramphenicol (Chloromycetin) and other antibiotic drugs. The study cases consisted essentially of all reported deaths (183) from aplastic anemia or pancytopenia recorded during the period January 1957-June 1961. Antimicrobial drugs had been given to 42 persons, most of whom were in the "aplastic anemia" study category. More persons (30) received chloramphenicol than received all other antimicrobial drugs combined (28). Half of the persons who received chloramphenicol had also received another antimicrobial drug, for the most part not known to be toxic to bone marrow. A significant statistical correlation was found between chloramphenicol sales volume (sales data provided by Parke, Davis & Co.) and the number of reported deaths from aplastic anemia. The 30 fatal cases with a history of chloramphenicol exposure differed epidemiologically from 108 study deaths without record of chloramphenicol exposure: (a) the chloramphenicol exposed group was younger than the remainder of the study sample; (b) the average time between clinical onset of blood dyscrasia and death was shorter among those exposed to chloramphenicol than among those not exposed; (c) there was a concentration of cases with clinical onset of symptoms in the months of April and May among persons exposed to chloramphenicol. There was no such concentration at any particular time of year among persons not exposed to the antibiotic. The risk of fatal aplastic anemia in persons receiving chloramphenicol is at least 1:60,000—probably much greater. The study revealed that in many cases chloramphenicol had been used injudiciously for conditions in which another antibiotic would have been just as effective. Chloramphenicol was rarely used according to the criteria recommended by the AMA's Council on Drugs, the Am Acad Pediatrics, the FDA, and many eminent medical authorities. Chloramphenicol must be used judiciously because periodic blood counts can not be relied upon to detect signs of bone marrow toxicity before irreversible aplastic anemia develops. *Judicious use prohibits chloramphenicol for prophylaxis, for trivial infections, and for infections in which a less dangerous drug may be equally effective.*—Smick et al (Calif State Dept Public Health), J. Chronic Dis 17: 899, October 1964.

TRI-SERVICE PEDIATRIC SEMINAR

The first Tri-Service Pediatric Seminar will be held at Walter Reed General Hospital, Washington, D.C. on 3-5 March 1965, under the direction of COL John P. Fairchild, Chief of Pediatrics.

All pediatricians and residents in this specialty on active duty are eligible to attend. A limited number of officers can be authorized to attend the seminar on travel and per diem orders chargeable against BuMed funds. Officers who cannot be provided with travel orders to attend at Navy expense will be issued Authorization Orders by their commanding officers following confirmation by this Bureau that space is available. Requests should be forwarded via chain of command in accordance with BUMEDINST 1520.8A NOTE: The deadline for receipt of requests in this Bureau is 1 February 1965.

MANAGEMENT OF POISONING CASES

In an effort to reduce the toll of disability and death from ingestion of poisons, all medical personnel who may be called upon to make immediate decisions with regard to the management of poisoning cases are urged to be thoroughly familiar with the basic principles of treatment of the more common poisons.

The commonest situation is that of the arrival of a two or three year old child in an emergency room, accompanied by a distraught and guilt-ridden parent, shortly after ingestion of an (often) unknown amount of an (often) unknown substance. Since rapid and effective treatment is the essential feature of the management of acute poisoning, skill, confidence and resourcefulness are prerequisites in those who have to deal with this most serious of emergencies. Attention is invited to the following points:

1. Since specific treatment depends on knowledge of the type of poison (rather than the amount), everything possible should be done to ascertain this. It should be remembered that a sample of an ingested poison is almost always available—the gastric contents.

2. For poisons ingested within eight hours, the stomach must be washed out, whether vomiting has occurred or not, unless strong acids or alkalies are involved.

3. The tendency to assume that there is no danger if the patient appears normal should be resisted unless it is absolutely certain that the amount is essentially harmless. Many of those who have died looked well right after ingestion of the poison.

4. When in doubt, lavage immediately. It is better to do this one hundred times when not necessary than to miss one case when it is lifesaving.

5. All responsible personnel should be cognizant of the local sources of information about poisons, whether the local Poison Control Center, local toxicology or chemistry laboratories, or available textbooks.—Submitted by CDR F. J. Linehan MC USN, Code 311, BUMED.

DENTAL SECTION

ORAL EXFOLIATIVE CYTOLOGY AS AN AID TO DIAGNOSIS

H.D. Millard DDS MS, University of Michigan, Ann Arbor, Michigan. JADA 69(5): 547–550, November 1964.

The purpose of this paper is to examine the technique of oral exfoliative cytology from the point of view of neither the oral pathologist nor the cytologist, but from the point of view of the teacher of oral diagnosis who must deal mainly with the results of the technic. The teacher of oral diagnosis must decide what emphasis to place on oral cytology in comparison to the technic of biopsy. At all times he must weigh the value of the procedure, not from the standpoint of its simplicity, but from the standpoint of the assistance the procedure lends to making an accurate diagnosis.

In a practical sense, oral cytology may have some important side effects on the diagnosis of oral disease. If it accomplishes nothing more than to encourage a thorough examination of oral soft tissues on a widespread basis, it would serve an extremely useful purpose. Oral cytology may contribute a great deal to making a diagnosis in certain specific situations. When there are observed mucosal changes in which the oral mucosa shows widespread involvement rendering biopsy of the region impractical, perhaps a combination of biopsy of clinically representative regions and cytologic examination of the remainder of the large area of change would be helpful in evaluating the entire lesion. Cytologic examination is useful in patients in whom biopsy is contraindicated, such as in patients who have systemic disease involving hemorrhagic risks or reduced resistence to infection. Perhaps the most important aspect of oral cytology will turn out to be the fact that it provides a simple, painless, bloodless way for dentists to examine lesions about which they now do nothing until the lesions get so large that they can no longer be ignored.

The limitations of oral cytology are several. Most important is that it only reveals if a lesion is or is not carcinoma. It is important to rule out cancer as a possible diagnosis, but at the same time it is important to determine the specific nature of the tissue change when it is not carcinoma. Oral cytology provides identification of only a few specific tissue changes other than those of cancer. Cytology does not give any notion of extent of invasion, nor does it identify the degree of differentiation of carcinoma of the oral mucosa. Another limitation is the reliability of the technic of cytology as it is based on current information.

The proponents of the oral cytologic technic emphasize that the technic is not a substitute for biopsy but should be used only as an adjunct to the biopsy in the diagnosis of oral cancer.

EVALUATION OF INDIRECT PULP-CAPPING TECHNIQUES

B. C. Kerkhove Jr., S. C. Herman, and R. E. McDonald, Indiana University School of Dentistry, Indianapolis, J D Res 43(5)Part II: 807-808, Sep-Oct 1964.

The study was designed to provide information regarding the effectiveness of two materials—calcium hydroxide and zinc oxide and eugenol, when used as agents to cover residual caries in deciduous and permanent teeth for periods of time up to one year. Changes in the dentin and the pulp beneath the pulp-capping agents were also evaluated. Eighty-seven teeth including 21 mandibular first prmanent molars and 42 second deciduous molars and 24 first deciduous molars with extensive caries have been studied. The criteria of selection of teenth for treatment and study were clinical

and radiographic evidence of deep caries; absence of painful pulpitis; normal response to pulp tests; lack of radiographic evidence of periapical pathosis; sufficient clinical crown to permit isolation during excavation and placement of the capping agent; and subsequent restoration with silver amalgam. Following the removal of the necrotic layer of caries, a dressing of zinc oxide and eugenol was placed over the residual caries in one-half the teeth, and in the remaining teeth calcium hydroxide was used as the capping material. All teeth were restored with silver amalgam. Preoperative and postoperative periapical identical radiographs were taken utilizing the Bencow technique. Additional radiographs were taken at 3-, 7-, and 12-month intervals. Eighty-five of the teeth have remained asymptomatic through the observation period. Two teeth were removed because of radiographic evidence of periapical pathosis. Under the conditions of this study, radiographic evidence of sclerotic dentin has not been observed routinely under either of the capping materials. Removal of the amalgam restoration and the pulp-capping material at the end of the 12-month period has revealed caries arrestment and a sound pigmented dentin base.

FLUORIDATION NEWS

Water Newsletter 6(20): October 21, 1964.

A report in the International Dental Journal estimates that more than 71,000,000 people throughout the world are drinking fluoridated water. The U.S. has 2,519 fluoridated water supplies; Canada 202; and Brazil 58. Great Britain and Switzerland are said to have only two fluoridated community water supplies each.

In the USSR, a researcher at one scientific institute has studied the effects of a local water supply which has a natural fluoride content of 4ppm (present recommended level for artificial fluoridation is 1ppm) and says that mottling of the teeth of the town's oldsters is the only detrimental effect. On the credit side he found that death rates from cancer, TB, and heart disease for the years studied were lower in that town than in other areas with less or no fluoride in the water. New studies will attempt to determine whether fluoride is useful as a deterrent for conditions other than tooth decay.

In Austin, Minnesota, dentists reported a reduction in dental caries in six-year-olds of 70 percent after fluoridation of city water. When local political pressure forced the discontinuance of fluoridation, the caries rate in this group doubled during the next three years.

Rust in the water led to the loss of fluoridation in Riverhead, N. Y., despite the overwhelming support of local health authorities. The fluoride, added to the water since 1952, was blamed for rusty dirty water despite the fact that consulting engineers told the town board that the high *iron content* of the city water was the cause of the rust.

RETENTIVE PROPERTIES OF DENTAL CEMENTS

Oldham, Drew F., Swartz, Marjorie L., and Phillips, Ralph W. Indiana University School of Dentistry. J D Res 14: 760-768, July-August 1964. D Abs 9(10): 632, October 1964.

A test of the retentive property of six commercial dental cements showed that zinc phosphate cement offered the greatest resistance to removal, with a silicophosphate cement a close second. In descending order of retentive power were silicate cement and three brands of zinc oxide-eugenol cement. One material, Temp-Bond, designed and marketed only for temporary cementation, exhibited less retention than the other cements.

A study of the effect of five cavity liners and bases on the retentive property of zinc phosphate cement showed that only one—the calcium hydroxide liner, Pulpdent—reduced the retention of the inlays.

The cements and liners were tested by preparing cavities in extracted upper molars, cementing inlays with hooks into the cavities and measuring the stress required to remove the inlays.

The results are in close agreement with those obtained in a similar investigation assessing the abilities of cements to retain orthodontic bands (J. D. Williams, 1963). Based on the information obtained in the present study, zinc oxide-eugenol material would not be a wise choice to use for cementation in regions of high stress or where retention is greatly dependent on the cementing medium. Use of a cavity varnish before cementation, to protect the tooth from the phosphoric acid present in certain types of cements, can be recommended without fear of a deleterious effect on retention.

Recent studies carried out on more than 12,000 sera and samples of cerebrospinal fluid suggest that the fluorescent treponemal antibody (FTA) test is destined to become one of the basic serological diagnostic tests for syphillis.—WHO Chronicle 18(8): 308, August 1964.

PERSONNEL AND PROFESSIONAL NOTES

U.S. Navy Dental Officer Presentations. CAPT W. A. Monroe DC USN, U.S. Naval Training Center, San Diego, California, and CDR C. A. DeLaurentis DC USN, USS ST. PAUL, operated before fellow members of the American Academy of Gold Foil Operators at the Annual Meeting held 6 November 1964, at the University of California Dental School in San Francisco, California.

They used the "musical chairs" approach to demonstrate the value of standardized instrumentation and procedures in Gold Foil Operations. Upon a given signal each would immediately exchange patients and continue the foil operation at whatever stage they found it.

CAPT Norman B. Shipley DC USN, Naval Auxiliary Air Station, Meridian, Mississippi, presented a paper entitled "Autogenous Dental Transplants" before the Meridian Area Dental Society on 17 November 1964, at the NAAS Officers Club. The meeting was hosted by CAPT Shipley, who later was elected to serve as Vice-President of the Society for the year 1965.

CAPT Kimble A. Traeger DC USN, U. S. Naval Hospital, Philadelphia, Pennsylvania, presented a lecture entitled "Treatment of Maxillary Fractures" before the Delaware Valley Society of Oral Surgeons on 18 November 1964.

Four dental officers from the ELEVENTH Naval District presented table clinics during a meeting of the San Diego County Dental Society on 7 December 1964. The clinicians and their topics were:

CAPT William M. Marking DC USN US Naval Station, San Diego, Calif.	Concepts of Partial Denture Design
CAPT Tomas C. Pablos DC USN US MarCor Recruit Depot, San Diego, Calif.	The Bar Fixed Partial Denture
CDR Joseph E. Hartnett DC USN US Naval AmPhibBase, San Diego, Calif.	Temporomandibular Joint Roentgenography
LT David J. Krutchkoff DC USNR US Naval Station, San Diego, Calif.	Dynesthetics

CAPT Theodore R. Hunley DC USN, U.S. Naval Dental School, NNMC, Bethesda, Maryland, presented two projected lectures entitled "Basic Crown and Bridge Concepts in Short Span Bridges" before the Greater New York Dental Society, 8-9 December 1964, in New York, New York.

Three dental officers from the U.S. Naval Dental School, NNMC, Bethesda, Maryland, were invited to participate at a meeting of the District of Columbia Dental Society, on 8 December 1964, in Washington, D.C. They presented a three-fold discussion concerning pertinent problems in everyday practice of General Dentistry, entitled "Advanced Procedures of Dental Operations." The clinicians and their topics were:

CAPT JOHN W. Pepper DC USN	Reinforcing a Single Tooth
CAPT Lloyd M. Armstrong DC USN	Splinting Three Teeth
CAPT Peter F. Fedi, Jr. DC USN	Assisting Crown and Bridge Procedures via Peridontal Surgery

During the 131st Annual American Association for the Advancement of Science held in Montreal, Canada, 26-31 December 1964, two U.S. Navy Dental Officers participated in a four-session symposium on "Environmental Variables in Oral Disease." As noted in the U.S. Navy Medical News Letter 45(1), CAPT Fred L. Losee DC USN, participated in Part I, Geographic and Clinical Considerations.

Robert van Reen PhD, National Naval Medical Center, presided over Part II, The Oral Environment—Nutrition and Dental Caries. During this second session, CAPT Gordon H. Rovelstad DC USN, U.S. Naval Dental School, NNMC, Bethesda, Maryland, presented a scientific paper concerning salivary components and their relationship to oral disease status.

Staff DO-CMC Participates in Civil Defense Conference. CAPT Victor J. Niiranen DC USN, participated in the Sixth National Dental Civil Defense Conference, sponsored by the Council on Federal Dental Services, at the recent Annual Meeting of the American Dental Association in San Francisco, California.

CAPT Niiranen presented a lecture, "The Role of the Dental Profession in Disaster: Theory and Practice" in which he stressed the role of the dentist during times of disaster. He stated assistance by the dentist may be provided in any one of three ways:

(1) Direct emergency care may be given by the administration of anesthetics, parenteral therapy or the treatment of wounds, burns, shock, or radiation.

(2) Administrative assistance could be provided by organizing groups for a concerted effort or by arranging for the provision of needed facilities and supplies.

(3) Train others in the treatment of casualties.

Identification of Qualified Oral Surgery and Ticonium Technicians. Responsible dental officers are requested to notify BuMed (Code 6133) when dental technicians become qualified as Oral Surgery Technicians or as Ticonium Technicians. The standard for qualification as Oral Surgery Technician shall be the applicable portions of the Hospital Corps' Operating Room Technic Course or its equivalent. The standard for qualification as Ticonium Technician shall be the Ticonium Technics Course of the CMP Industries, Albany, New York, or its equivalent.

A notation of such qualification will be made in each man's record for use as an aid in making future assignments.

Dental Officers Retire. The following dental officers retired during the second quarter of Fiscal Year 1965:

CAPT Roger G. Gerry DC USN
CAPT John C. Robie DC USN
CAPT James G. Rogers DC USN
CAPT Christopher E. Thomlinson DC USN
CAPT John V. Reilly DC USN
CAPT Jerome F. Peters DC USN
CDR Donald J. Miller DC USN
CDR Henry J. Ruff DC USN

Lack of Accident Insurance Cost Serviceman $50,000. A recent court judgment against a young military man involved in a serious automobile accident vividly brings forth the importance of purchasing enough liability insurance on your car.

"Enough" will vary with the individual and should be determined only after consulting your insurance agent.

The young man, an E–3, was convicted of negligent driving resulting in the death of a passenger in the other car involved. A judgment of $50,000 was placed against him. He had no insurance on his car.

By his lack of consideration concerning the importance of proper insurance, this young man placed himself practically in voluntary brankruptcy for the better part of his life. Until he pays the $50,000 in full, he can never own or purchase anything other than the necessities of life. His credit standing can be considered worthless. No matter where he goes, this stigma follows. If he leaves the service the opportunity of ever obtaining a worthwhile position has been seriously jeopardized. All this burden to carry simply because he lacked a little forethought.

The significance of this indifferent thinking should require no further emphasis. The cost of proper and sufficient insurance on your car, no matter how high it may seem, is but a fraction of what it will be in dollars, morale and your future position in life if a judgment is placed against you.

Assure your peace of mind by insuring yourself against an unhappy future.

This story, appearing in the NAS Miramar JET JOURNAL XIV (31): 3, Nov 25 1964, should be brought to the attention of all personnel.—BUMED Code 611.

SEMINAR ON CULEX PIPIENS COMPLEX

A WHO seminar on the ecology, biology and control of the *Culex pipiens* complex was held in Geneva from 31 August to 2 September 1964. The seminar, at which about 20 countries were represented, has particular importance in view of growing urbanization, which has resulted in an increase in *Culex pipiens* fatigans breeding and the transmission of filariasis.

Extensive data on the *Culex pipiens* complex and its control have been collected during the past three years in different parts of the world. These were studied at the seminar along with material from the WHO Filiariasis Research Unit in Rangoon, Burma, which has now been in operation for some 18 months.—WHO Chronicle 18(8): 311, August 1964.

PREVENTIVE MEDICINE

VECTOR ECOLOGY AND INTEGRATED CONTROL PROCEDURES

Laird, Marshall, Supple to Bull Wld Hlth Org 29: 147-151, 1963.

RELATIONSHIPS BETWEEN VECTORS AND ENVIRONMENT

Such terms as "bionomics" and "ecology" are often used rather loosely in mosquito survey reports and other general papers on medical entomology. Thus the first commonly boils down to little more than a mere cataloguing of "mosquito breeding-places," and the second to a few remarks on certain associated plants and animals (seldom specifically identified) that happened to attract the investigator's attention. This is symptomatic of the attitude that permited "mosquito breeding-place" to become firmly entrenched in the literature in the first place. It is submitted that while we persist in so designating the various types of mosquito-producing water collections, attempts to classify the latter systematically are likely to end in failure.

Well do they deserve to do so, when resting on the implication that the major ecological attribute of such waters is their utilization by particular mosquitoes. This suggests a simplicity that is unfortunately illusory, as even quite small natural water bodies may support startlingly complex communities of diverse plants and animals. By way of illustration, while it does not seem out of the ordinary that a Singapore duck pond the size of a tennis court and rich in organic pollutants should harbour more than a hundred species of organisms referable to most of the major groups of fresh water life, it may occasion surprise that as many as 202 species of animals and plants have been identified from a subarctic Canadian snow-melt pool only 2.5 metres in diameter (unpublished data). Moreover, in neither of these cases was the picture ever quite the same at successive samplings, both associations having dynamic status and differing from one day to the next.

Each of these water bodies supported developmental stages of several species of mosquitoes. Some of the latter harboured endoparasites and their body surfaces always bore epibionts, notably filamentous sewage bacteria and certain ciliate protozoa. There have been instances where specialists in the Culicidae, intent upon collecting mosquitoes alone from a "breeding-place," have encountered such epibionts and automatically assumed them to be specific parasites. Indeed, the literature is rich in names proposed for freshwater epibionts on the completely unjustified assumption of strict host-specificity. A wide range of taxonomists in other fields, be it noted, shares with medical entomologists this weakness for viewing water bodies primarily as the source of their own particular subject material.

Ciliate epibionts include representatives of the genus *Vorticella,* many species of which now have been described from freshwater organisms, from algae, rotifers and microcrustaceans to higher forms of many kinds including immature mayflies, chironomid midges and mosquitoes. Regrettably often, the authors concerned have neither admitted the possibility that their vorticellid might already be known from hosts other

than the one before them, nor have they followed the International Code of Zoological Nomenclature by depositing type material in reference collections. Synonyms have multiplied, and indeed it seems likely that numerous presumed species of *Vorticella* are really referable to the cosmopolitan and pollution-tolerant *V. microstoma.* At all events, this proved to be the dominant species on the larvae in the Singapore pond already mentioned, and not only on them, but on many of the associated organisms as well. It was the degree of pollution that determined the composition of the epibiotic communities, which proved to succeed one another in a predictable sequence as pollution levels fluctuated (Laird, 1959). Under laboratory as well as field conditions such epibionts can help to kill mosquito larvae and other aquatic life already at a disadvantage through exposure to an adverse environment characterized by pollution levels near their limits of tolerance (Laird, 1958).

At Singapore, the level of pollution in the pond mentioned reflected how recently its Chinese owner had enriched the water with manure for the benefit of a water-hyacinth crop. In subarctic Canada, where a different epibiotic ciliate was implicated but the same principle held good, springtime sources of organic pollution included the decomposing remains of frozen plants and animals and the faeces of migratory birds.

It would therefore seem evident that the bionomics of developing mosquitoes, like other sectors of freshwater ecology, can only be fully understood against detailed background knowledge of the ecosystem. In context, it would surely be in the interest of clarity to abandon the term "breeding-place" in favor of the increasingly widely used "larval habitat."

The web of interrelationships between a given mosquito and its organic and inorganic environment cannot be unwoven without exact knowledge of food chains, of the relative importance of the various predators dwelling in the habitat, and of many other such matters. Existing information on these subjects, although voluminous, is often less helpful than might have been anticipated. For example, a good deal of the earlier writings on mosquito larval nutrition comprised analyses of the gut contents of larvae. Some of the most resistant and easily identifiable elements located during such dissections (e.g., certain diatoms and desmids) often pass out from the body without having been of any food significance at all. On the other hand, delicate flagellates and ciliate (comprising a large part of the biomass and an important source of larval nutrition) cease to be recognizable moments after ingestion. Therefore, they are not noted in the midgut contents. Again, a predacious dytiscid beetle that, in the absence of other prey, devours mosquito larvae from its natural habitat when imprisoned with them in a small laboratory container does not necessarily exercise a preference for mosquito larvae from among the range of alternatives normally confronting it.

There has long been theoretical appreciation of the roles of pathogens, parasites, predators and other environmental factors in the natural limitation of pest populations, but only recently has the importance of this factor been seriously considered in meeting control problems. By the time the latter are faced, urgency is usually their keynote and measures yielding immediate and obvious results are being demanded. Where this leads to the wholesale use of non-selective pesticides without preliminary ecological investigations, there is not only no baseline for the critical evaluation of the results, but new problems may be caused and old ones aggravated through the disruption of biotic equilibria. An early example of the latter, ultimately benefiting the organism under attack, concerns an attempt to control blackflies in an Ontario stream in 1944 (Davies, 1950). DDT was applied at what would now be regarded as a highly excessive dosage, bringing about spectacular but short-lived control of simuliids. A year later, due to the fact that the obliterated communities of relatively long-lived benthic predators had not yet re-established themselves, the average blackfly emergence rate for a test zone of the stream was about 17 times that of the precontrol period. As larviciding is being regarded as a major part of vector control measures associated with the reduction of onchocerciasis, it should be pointed out that recent field studies in East Africa (Hynes & Williams, 1962) have again stressed the danger of freeing blackfly populations from predator pressure. Hynes & Williams' studies even suggested that unwitting predator eradication through the misuse of insecticides would be a distinct possibility. Possible long-term consequences of such an eventuality being self-evident, there is a strong case for more liaison between vector control and limnology.

Some recent examples are pertinent at this juncture. One of these concerns the Australian part of New Guinea, where the partial extraction of *Anopheles farauti* from the environment by means of residual wall sprays alone was followed by the unexpected exploitation by pest culicines of the under-utilized larval habitats formerly occupied by the anopheline (I. M. Mackerras—personal communication, 1961). The result was a very significant increase in the numbers of biting attacks by "wild" culicines, a fact that did not go unnoticed by the local Melanesian population whose confidence in the mosquito-reduction powers of their medical authorities was lowered accordingly. This evidence of the replacement of one insect species by another could conceivably have some practical application (e.g., replacement of a vector by an insect without public health interest—of an anopheline by a dixid midge, for example).

The second example concerns Sarawak, on the island of Borneo, where thatch-destroying caterpillars of *Herculia* moths have increased in number as a direct result of an active malaria eradication program. In this instance, household insecticidal residues have killed not only anophelines but also a hymenopterous parasite of the thatch moth concerned. The latter, safe within the roofing material, has flourished accordingly (Cheng. 1963).

Lastly, it is widely known that increases in bedbug populations have accompanied malaria eradication wall spraying in certain areas. Bedbug resistance to insecticides is a factor here, but it is not necessarily the only one. Studies in Delhi (Wattal & Kalva, 1960) showed that a contributory factor was the removal of predator pressure by wall spraying; caterpillars of a common Indian household pest, the *Pyralis pictalis* moth, proved to have been destroying significant numbers of bedbug eggs prior to the inception of the spray program. It has repeatedly been said that populations which have been freed from malaria and other vector-borne diseases henceforward expect higher standards of pest control generally. Problems such as those referred to are going to have to be solved from this standpoint, if not from that of disease transmission.

INTEGRATED CONTROL PROCEDURES

Painstaking investigations of the ecological effects of chemical control projects on arthropod populations in orchards (Pickett, 1961) have recently indicated that biotic control agents usually constitute the major portion of the environmental resistance to increases in pest numbers. In the field of economic entomology generally, there is a growing realization that this is so and that insecticides should be fitted into the ecosystem instead of being imposed upon it. Those responsible for control projects involving insects of agricultural and forestry importance are thus actively developing integrated control procedures. There is in fact a great deal to be learned from the experience gained in the economic field, and, just as has been remarked concerning limnology, there is much to be gained from closer liaison between public health entomologists and economic entomologists.

Integrated control procedures supplement chemical, physical or cultural control measures with effects of the natural enemies of undesirable organisms. Integrated control should not be confused with dual- or multi-purpose control—that is, the simultaneous attacking of two or more pests by means of a single procedure. Neither should it be mixed up with co-ordinated control, which involves co-operation between two or more agencies with the object of minimizing clashes of interests while both are working upon a particular ecosystem.

Integrated control procedures involve, firstly, avoiding loss of the effectiveness of established complexes of natural enemies of undesirable insects through appropriate timing, sitting and formulation of insecticidal applications.

As regards timing, this is a matter on which advice must be sought from the ecologist, who is in the best position to designate the point at which a vector population can be attacked with maximal effect. A case in point would be the widespread application of larvicides to subarctic snow-melt pools early in spring—early enough to reduce heavily the initial pest *Aedes* which rapidly develop almost free from predator attack, although not so late as to harm the complex associations of arthropod predators which subsequently develop and thereafter serve as valuable limiting factors upon mosquito populations. Appropriate formulation would be important in this connexion too. Recent Californian investigations (those of Mulla et al., 1962, for instance) have suggested that by carefully regulating dosage rates and formulations, and through the selective activity of certain organophosphorus and carbamate compounds, mosquito control may be implemented in surface waters without unduly affecting natural enemies. Fish and even arthropod predators may be conserved through this approach. Again, it has been suggested that insoluble suspended insecticidal particles might be employed to combine a high blackfly kill with minimum destruction of associated organisms.

Secondly, integrated control procedures may combine other control measures with biological ones, that is to say, with direct or indirect manipulation of natural enemies (pathogens, parasites and predators), to increase the incidence of mortality in the population under attack. In this context, biological control also embraces autocidal control, involving sterilization and genetical procedures by which individuals of a pest species are manipulated to harm their own kind. Among the "other" control measures sanitary ones should be specially mentioned for these have too often been neglected in the era of synthetic insecticides.

Indirect manipulation of natural enemies for integrated control was actually achieved on a local scale in Malaya before the Second World War. I refer to the deliberate pollution of ponds to render them unattractive to vector anophelines. One of the immediate consequences of such pollution was the flourishing of vorticellid and other epibionts. As already mentioned, these seem especially harmful to mosquito larvae weakened by a trend towards anaerobic conditions in their surroundings.

A very pertinent example of direct manipulation from the agricultural field is provided by recent studies in the USSR involving the joint use of fungal pathogens and insecticides to provide synergistic effects, the combined effect of the chemical and biological methods

proving better than the sum of their individual applications. Again, during recent WHO-sponsored field experiments in the Tokelau Islands, the fungus *Coelomomyces stegomyiae* was found to be a promising candidate biological control agent against the local vector of bancroftian filariasis, *Aedes polynesiensis*. At the same time, dieldrin-cement briquettes proved very useful for the long-term prevention of mosquito breeding in household water drums in the villages. There would seem to be a good case here for devising an operational control procedure based upon the joint employment of Coelomomyces and other self-perpetuating biological control agents in bush areas of such atolls, and insecticidal briquettes in the peridomestic zone. An operational integrated control procedure on these lines might well achieve the interruption of filariasis transmission.

It is submitted that integrated vector control procedures based upon sound ecological preparations offer a way out of the resistance impasse—a way, moreover, that guarantees a much more selective form of control and offers prospects of economically reducing vector populations to levels at which human disease transmission ceases. Furthermore, the long-term nature of the reduction achieved would help prevent the resurgence of pest populations following the completion of vector control programs. Of course, a great deal more research must be done before there is any prospect of practicable vector control along these lines. A first essential in developing such a research program should be the devising of appropriate collecting and measuring techniques followed by the co-ordinated collection of necessary basic data (on vector ecology as well as on related aspects of biological control) on a global scale.

Summary. The elucidation of population regulatory mechanisms calls for exhaustive biological and ecological studies of whole ecosystems. Until lately, little effort was made to relate insect control activities to such a background, and the use of non-selective pesticides has often resulted in biotic equilibria being disrupted to the ultimate advantage of the organism under attack or of some other undesirable species. However, there is a growing realization in the field of economic entomology at large that biotic control agents usually constitute the major portion of the environmental resistance to increases in pest numbers and that insecticides should be fitted into the ecosystem, and not imposed upon it—in fact, that integrated control procedures are called for.

The author considers such integrated procedures from the standpoint of vector control. His paper points out their potentialities in helping to solve resistance problems and in increasing the selectivity of control operations. It further suggests that they offer the means of achieving economical and lasting reductions of vector populations to levels at which human disease transmission is interrupted and pest problems lose much of their importance.

A LOCALIZED OUTBREAK OF COCCIDIOIDOMYCOSIS IN MEXICO

Meehan, Herbert MD, Los Angeles County Health Index, 41st Report Week, Ending 10 Oct 1964.

About the middle of July 1964, 13 individuals, from widely varied places in the United States, set up a camp approximately 5 miles south of Tijuana, Mexico, near the orphanage, Casa de la Esperanza, on the road to Ensenada, in order to excavate a site to enlarge the orphanage. This was a project of the Service Commission of the Brethren Church, and those involved were all volunteers. One week later, 2 additional persons joined the group and the following week another arrived, making a total of 16. Their work consisted of moving dirt with picks and shovels for the foundation of the addition to the orphanage. The area was hot and dry, and it was a dusty operation.

They brought food with them and prepared their own meals. Water was obtained from an approved source. Only powdered milk was used. Sewage disposal was by means of open privies. Flies were numerous.

Approximately 2 weeks after operations began, illness began to occur among this group. At the end of 4 weeks, 8 of the 16 (50%) in camp, had been listed as victims of this illness. At this time it was decided to abandon camp and return to the United States.

The symptoms varied from lassitude, malaise, and weakness in the milder cases, to chills, sweats, fever, headache, cough, chest and back pains, joint pains and rash, especially on the legs, in the more severe cases.

The 8 who did not become ill included the cook and her 3 children who did no excavating, 2 women who only did clerical work, one boy who arrived a week late and did mostly construction work and the one who arrived 2 weeks late and only worked in the deeper part of the excavation. All who worked at removing the upper layers of dirt became ill.

The patients were seen by physicians in various parts of the United States upon their return to their respective homes. In only one of these cases was there a diagnosis of coccidioidomycosis. In that case the diagnosis followed a third admission to a hospital, in Pittsburgh, Pennsylvania.

The diagnosis of the individual case of coccidioidomycosis presents difficulties as the disease is most frequently subclinical or the illness transient. When the illness can be related to other similar illness in a group with a common exposure such as the 16 persons working at the orphanage in Mexico, the possibility of coccidioidomycosis is suggested.

Coccidioidomycosis is a fungus infection resulting from a fungus found in the soil in many parts of southwestern United States, and Mexico.

The incubation period varies from 10 days to 3 weeks and the illness may occur at any age. Its most severe form occurs most commonly among the colored races. There are two major types—the primary infection and progressive coccidioidomycosis. Only 0.2% of primary cases develop the progressive fatal infection. If the primary infection persists for 5 to 6 weeks with signs, symptoms and x-ray findings, the widespread, generalized infection of the progressive type should be suspected. Complement-fixing antibodies in high titer indicate spreading infection and a poor prognosis. This protean disease may mimic tuberculosis, syphillis, and other mycotic infections, such as actimomycosis, sporotrichosis and blastomycosis.

Miscroscopic analysis of pus, sputum, and of the sediment of centrifuged pleural fluid and gastric contents may all assist in the diagnosis. Infected materials may be cultured on various media. Mice should be inoculated intraperitoneally with either infected material or suspicious cultures. When positive, the characteristic spherules can be found in the tissues or exudates of such animals.

TURTLES AS A SOURCE OF SALMONELLOSIS

Reported by Epidemiologist, Div Communic Dis and Asst Vet Off, Mass Dept Hlth, CDC, Salmonella Surveillance, Rpt No. 30 p 7, 28 Oct 1964.

Increasing number of reports of turtles as potential reservoirs of salmonella organisms, prompted the Division of Communicable Diseases investigated cases of salmonellosis involving relatively uncommon sero-types which have been associated with turtles in other parts of the country. *Salmonella braenderup* was chosen, and 2 isolated cases in children were investigated. Upon questioning it was found that both had contact with pet turtles within their home.

One case involved an 8 month-old girl who became ill on August 1, 1964, with bloody diarrhea and fever. Symptoms persisted for approximately one week. At the time the family was caring for a neighbor's pet turtle. The infant apparently had no direct contact with the turtle, but the mother, in caring for the turtle, changed the turtle water in the kitchen sink. No other family member reported any symptoms of illness. On Sept. 1, the turtle in question and the turtle water were cultured. Both were positive for *S. braenderup.*

The second case involved a family of 6 persons. On Mar. 27, a 6 month infant had severe diarrhea for 3 days. The stool specimen was positive for *S. braenderup.* No other family members reported illness but cultures taken from a sister 3 years of age, and the mother, 31 years of age, were positive for *S. braenderup.* This turtle's bowl was also cleaned in the kitchen sink. On Sept. 9, the turtle was secured and found to be positive for *S. braenderup.* No further illnesses had been present since March within the family.

Following these two fruitful investigations, it was decided to randomly sample a number of chain stores supplying pet turtles to the community. Two turtles were secured from each of the 5 stores. Eight of these were positive for salmonella. Serotyping has not been completed. The two negative turtles were secured from the same store, where 140 mg. of Aureomycin (R) per 9 gallons of water were added to the aquarium to prevent the growth of "fungi". The effect of this level of Aureomycin on salmonella growth will be investigated. No isolates were made from samples of turtle feed used in these establishments.

Editor's Comment: A most valuable investigation. Worthy of note is the fact that the turtles positive for *S. braenderup* had in all likelihood been carrying the organism for some time. As is frequently the case, the feed was negative for salmonellae. In all likelihood the turtles are infected either at the store prior to distribution, or more likely at the turtle farm where rendered meat scraps and chicken offal are frequently used as food.

VACCINE FORECAST FOR CHAGAS DISEASE

This Week in Public Health, Mass Dept of Pub Hlth, 13(39): 388, 23 Sept 1964.

Vaccination against insect-transmitted Chagas' Disease, long thought impossible, is now conceivable, according to a report made to the American Society of Parasitology by a representative of Ciba Pharmaceutical Co. This company has developed a vaccine that immunized mice for four months against experimentally produced infection. This gives a ray of hope to more than 7 million persons in South and Central America who are afflicted with the often fatal sickness.

Chagas' Disease, which usually begins in the first 10 years of life, starts, in 25—75% of cases, by affecting the eye. While pain is mostly mild, the skin around the eyes reddens and swells. Two main stages follow. In the acute period fever strikes, eruptions of various types appear on the skin, and lymph nodes are enlarged. At the later chronic level, serious heart problems become evident.

The new experimental vaccine, which kept its potency for at least three months when deep-frozen, is made by "physically" killing *Trypanosoma cruzi,* the causal parasite.

EAR-INVADING BEETLES ACTIVE AGAIN AT BOY SCOUT JAMBOREE–VALLEY FORGE, PA.

Reported by Eldon P. Savage, State Aids Section, CDC, Atlanta, Ga., Vector Control Briefs, Issue No. 13, Sept 1964.

Human ear invasions by the Asiatic garden beetle, *Austoserica castanea,* were a serious problem at the 6th National Boy Scout Jamboree, Valley Forge National Park, Pennsylvania. From 13-23 July 1964, a total of 39 ear invasions among 52,000 scouts and leaders occurred in comparison with 186 cases at the 1957 Jamboree at Valley Forge.

This beetle was first recognized in America, in New Jersey, in 1922, and is now located at widely scattered points along the Atlantic seaboard. The adult beetle is shaped like a May beetle, is about ⅜ inch in length and it has long tibia spines which are particularly troublesome after the beetle invades the ear.

Since the larvae and pupae of the beetle inhabit the soil, 2 weeks prior to the Jamboree soil samples were taken, but only 3 larvae were found. Light trap collections produced less than 25 adult beetles per collection. It appeared that the beetle problem would be minor at the Jamboree and that insecticidal measures were not warranted.

An inspection on July 13 revealed a marked increase in the beetle population. Control measures, consisting of application of DDT granules to ground cover by a mist blower, were then instituted. Of the 30 sections of the 9,000-acre area, 13 were treated in entirety; 13 were treated around the perimeter; and 4 were not treated.

Prophylactic measures for individuals included placing cotton balls in the ears. A major pharmaceutical company supplied over 300,000 cotton balls for this purpose. Sanitarians developed some ingenious posters to educate the scouts in the use of cotton.

In spite of these efforts, ear invasions occurred because (1) communication broke down; (2) some troops ran out of cotton; (3) a few troop leaders dismissed the need for its use; and (4) in several instances the boys lost the cotton from their ears during the night.

Most of the ear invasions occurred while the scouts were sleeping on the ground; 1 case occurred in a leader who slept on a cot, and 1 invasion occurred during daylight hours while a leader was shaving.

Although an 80% reduction in ear invasions occurred in 1964 as compared to 1957, better surveillance and application of improved control measures during non-Jamboree years are needed. More information is needed on its control as related to public health in mass encampments.

KNOW YOUR WORLD

DID YOU KNOW:

That the 1965 Congressional appropriation to the Public Health Service VD Control Program is $10,030,000?

This is a net increase of $432,000 over the 1964 appropriation and $300,000 greater than the amount the Administration requested for 1965. (1)

That two changes took place in rank order of the 10 leading causes of death between 1963 and 1962?

As a result of the influenza epidemic, influenza and pneumonia rose to 5th place in 1963, replacing certain diseases of early infancy (5th in 1962). Other bronchopulmonic diseases (525-527) rose from the 13th leading cause in 1962 to 10th in 1963. Emphysema without mention of bronchitis (527.1), a subcategory of other bronchopulmonic diseases, accounts for most of the deaths in this group. (2)

That more people died of cholera in 1963 than in any of the 5 preceding years?

The World Health Organization reported that of 65,157 cases, 21,735 were fatal as compared with 41,575 cases and 12,016 deaths in 1962. India and Pakistan were the principal sufferers. (3)

That 1 death due to plague was reported on 25 Nov. 1964 in the District of Vryburg (Cape Province)?

The necessary measures were taken. No case of plague had been reported in South Africa since January 1962 (4 cases in Saint Marks District, Cape Province). (4)

That 906 cases occurred of a febrile and eruptive syndrome, frequently pustular, in the city of Iquitos, Peru, from April 1963 through April 1964?

Originally, this was thought to be chickenpox, but finally was interpreted as smallpox. Overall case fatality ratio was 7%. (5)

That an epidemic of dengue-like illness occurred in Martinique, in late 1963 and 1st quarter of 1964 although exact number of cases is unknown due to many mild atypical forms being present?

The clinical syndrome was characterized by sudden

onset, fever lasting 4-5 days (sometimes interrupted by a slight remission on the 3rd day), suborbital or retro-ocular headache, joint and muscle pains, anorexia, and slight eruption were present. The Pasteur Institute isolated an arborvirus Group B; it was not possible to identify it further as a dengue virus. Because of the presence of *Aedes aegypti* infestation in the region of Port-de-France, and occurrence of outbreaks of dengue in other areas of the Caribbean during the same period, the outbreak in Martinique may reasonably be attributed to dengue. (6)

That the health administration of Argentina reported 7 imported cases and 1 secondary case of smallpox in Paso de los Libres, Corrientes Province?

The imported cases came from Uruquaiana, Rio Grande do Sul State, Brazil. The secondary case is a 20-month old child. (7)

That 512 reported dysentry cases with 30 deaths occurred in Monte Carmelo, Trujillo State, Venezuela, from 3 May to 17 October 1964?

In an outbreak in Tinaquillo, Cojedes State, 595 cases with 26 deaths of dysentry have been reported since 29 June. Since April 1964, 4,443 cases of gastroenteritis with 70 deaths and 2,905 cases of dysentry with 63 deaths have been reported in San Cristobal, Tachira State, Brazil. (8)

References:
1. American Social Health Assn, Vol 39(7): 1, Oct 1964.
2. US DHEW Mo. Vital Statistics Rpt, PHS Supplement. Vol 13(8): 1-8, Nov 2 1964.
3. Washington Post, 6 Oct 1964, Geneva, Switzerland, "Cholera Death Rise".
4. WHO Wkly Epid Record, Vol 39(49): 625, Dec 4 1964.
5. PASBU Reg Office of WHO, Vol XXXVI(39): 223, Sept 23 1964.
6. PASBU Reg Office of WHO, Vol XXXVI(41): 236, Oct 7 1964.
7. PASBU Reg Office of WHO, Vol XXXVI(48): 275, Nov 25 1964.
8. PASBU Reg Office of WHO, Vol XXXVI(48): 276, Nov 25 1964.

SUMMARY, INFLUENZA AS OF 2 NOVEMBER 1964

CDC, Influenza Surveillance, Report No. 80, page 1, 2 Nov 1964.

Scattered clusters of febrile respiratory illness occurred in parts of Oregon that have involved individuals, some of whom showed serological evidence of A_2 influenza infection.

A_2 virus has recently been isolated from a case of characteristic clinical influenza representing part of a relatively widespread but low level outbreak in Puerto Rico. Serological evidence of infection has been demonstrated among a number of such cases from various parts of the Island. The virus isolate now being characterized in detail is readily identified using antisera against A_2/Japan/170/1962 widely employed in virus serological laboratories.

Preliminary communications from Hawaii describe an outbreak of respiratory illness on Oahu Island during the past month which appears serologically to be caused by influenza virus Type B, seemingly more related to the 1959 Maryland strain than to a 1962 Taiwan isolate.

The occurrence of these unseasonal outbreaks of influenza is presently not expected to alter the limited prospects for major outbreaks on the continent this winter. Careful surveillance in the coming weeks will be of importance to document the anticipated pattern.

International: Isolated outbreaks of influenza attributable to A_2 strains have occurred sporadically in various parts of the world since midspring. No epidemiological or clinical variations have emerged from these epidemics to suggest altered virus capacity. Virus strains have varied somewhat, but available evidence does not support a major antigenic shift.

TWO NEW SCHOOLS OF ADVANCED NURSING IN EUROPE

The WHO Regional Office for Europe is assisting in the establishment of two International Schools of Advanced Nursing Education, one in Edinburgh and the other in Lyons.

The purpose of both these schools is to prepare nurses for positions of leadership in selected specialized branches of nursing, for the administration of nursing education programmes and nursing services, and for research in nursing, and to expand facilities for advanced nursing education in Europe.

SNAKE STORY

Recently, a 20 year old Marine private stationed in a tropical area of this hemisphere was standing routine guard duty, and in the early morning hours he heard a faint restling in the nearby undergrowth. Investigating, he discovered the source of the noise, a snake. He pinned the snake just behind the head with a stick, and then reached down to grab it. The result was a bite on the right index finger by a Fer de Lance, one of the highly poisonous pit vipers. Fortunately, antivenin serum was available and adequate treatment was administered in less than one hour following the bite. The soldier had to endure only a few days suffering and only lost 17 days from duty. It could have been worse. With delay in treatment or absence of adequate antivenin therapy the mortality from poisonous snake bites rises rapidly.

Navy and Marine Corps personnel are frequently assigned to areas where poisonous snakes are hyperendemic. The natural American tendency is to try to catch them. And indeed, captured specimens are useful in identifying the prevalent species and for determining overall poisonous snake population. For these purposes, a dead snake is as good as a live one. So for safety's sake, kill it first.

—PrevMedDiv, BUMED

NATIONAL ASSOCIATION OF SANITARIANS

The National Association of Sanitarians was founded and incorporated in 1937. At the present time there are 38 state sections, 14 standing committees, and 25 project committees, with a membership of approximately 5,000. The basic purpose of this group is to assist in providing a fit environment in which people may live and to aid its membership in equipping themselves professionally to perform effectively in the accomplishment of this purpose. Its broad objectives include the following:

To provide specific services in the field of environmental health for individuals and official and voluntary agencies; to assume the obligations of the sciences and arts for the advancement of public health; to uphold and increase the standards of the environmental health profession; to search continually for truths and disseminate these findings to colleagues and interested parties; to strive for knowledge and be fully informed of the developments in the field of public health; to fully cooperate with all allied public health agencies; to promote the highest attainable standards of health to every human being without distinction of race, religion, cultural background, economic or social condition.

The National Association of Sanitarians also works closely with the military services. Probably its biggest function is to help in the area of employment following discharge from the Service.

Until 1 January 1966, any person who is a qualified sanitarian and employed by a governmental agency in public health work, or in public health education or inspection service by a private employer, or a student working for a degree in environmental health in the United States or other nations, is eligible for membership. This includes the three branches of military service. Following that time, requirements for membership will be:

One year of experience in the field of environmental sanitation and a bachelor's degree with a minimum of thirty semester units of academic work in the sanitary, physical, and biological sciences in addition to satisfactory completion of an examination.

Cost for membership with the N.A.S. is $10.00 per year. Membership application blanks can be obtained by writing:

National Association of Sanitarians
Room 208, Lincoln Building
1550 Lincoln Street
Denver, Colorado 80203

A resume of education and experience, accompanied by a check for $10.00, will be acceptable in lieu of a completed application blank. This $10.00 membership fee includes a subscription to the internationally recognized *Journal of Environmental Health,* a bi-monthly publication which will help in keeping abreast of developments in the field of environmental health.

The immediate program of the organization is as follows:

1. Promote the professionalization of sanitarians through the establishment of suitable academic standards.

2. Foster post-graduate education in the field of environmental health.

3. Assist in the development of programs for the provision of a fit environment for the citizens of America and other nations.

4. Aid in the control of those environmental factors that may have a direct influence on the transmission of diseases and the health and well-being of individuals and society.

5. Development of effective liaison with official and voluntary organizations, civic leaders, governmental units, professional societies, educational organizations, and industries that have responsibilities or concern in the advancement of environmental health in order that coordinated community sanitation programs and activities may be provided the public.

6. Education and organization of the sanitarian profession for the rendering of services for the solution

of national, state, and local environmental problems and the making of practical contributions in the field of public health.

7. Promote the teaching of environmental health in the home and among the youth of the country. Foster the presentation of suitable environmental health curricula in schools, colleges, and teacher training institutions.

8. Conduct studies and research in various environmental health problem areas and make findings and recommendations available to recognized public health officials and voluntary agencies.

9. Prepare and disseminate environmental health information through news releases, brochures, pamphlets, and participation in the development of audio-visual aids.

10. Provide leadership for the environmental health field so that its members may become more effective instruments in the promotion of the purposes and programs of public health.

—PrevMedDiv, BUMED

RESERVE SECTION

CLINICAL CONGRESS OF ABDOMINAL SURGEONS

The annual meeting of the Clinical Congress of Abdominal Surgeons will be held at the Jung Hotel, New Orleans, Louisiana during the period 20 through 24 February 1965. A Military Section in conjunction with this meeting will be held on the above dates and each session will be at least two hours in duration.

By authority of the Chief of Naval Personnel, one retirement point may be credited to eligible Naval Reserve Medical Corps officers in attendance. Officers are requested to register with the Commandant's Representative in order that attendance may be recorded and reported.

ARMED FORCES INSTITUTE OF PATHOLOGY LECTURES

The annual Armed Forces Institute of Pathology Lectures will be held in Washington, D. C. during the period 29 March to 2 April 1965.

By authority of the Chief of Naval Personnel, one retirement point may be credited to eligible Naval Reserve Medical Corps officers in attendance at each session or sessions of two hours duration. Officers are requested to register with the Commandant's Representative in order that attendance may be recorded and reported.

CHECK YOUR OWN SERVICE RECORD

NRA News, XI(12): 3, December 1964.

Many Naval Reserve officers who visit Washington, D. C. wish to check their records in the Bureau of Naval Personnel.

This can be done by going to Room 3057 in the Arlington Navy Annex and showing your ID card. If you want to look at a friend's records, you must have written authorization to do so.

Here are a few guidelines to help you in reviewing your record:

First thing to remember is that your official record is the property of the Navy Department. As such, rearranging the material, adding to it, or taking anything out, is not permitted. Nor are you permitted to make any marks, notations or erasures on any document in your record.

In fact, Title 18 of the U. S. Criminal Code, Section 2071 states:

"Whoever willfully and unlawfully conceals, removes, multilates, obliterates, or destroys, or attempts to do so, or with intent to do so takes and carries away any record, proceeding, map, book, paper, document, or other thing, filed or deposited with any clerk, or officer of any court of the United States, or in any public office, or with any judicial or public officer of the

United States, shall be fined not more than $2,000 or imprisoned not more than three years, or both."

If you find correspondence regarding another officer filed in your record, or if you have any questions about material that's in your record—or missing from it—the receptionist will be able to help you.

In checking your Fitness Report Jacket, you should see whether all your service is covered. If periods of reports are not consecutive and a gap exists, call it to the attention of the receptionist who will help you take steps to bring the record up to date.

Make sure a photograph in uniform in your present grade and taken within the last ten years is in your jacket. If not, photographic service is available in the Bureau for this purpose.

When checking your Selection Board Jacket and Miscellaneous Correspondence and Orders File, you should be sure that they contain all the material pertinent to your naval service and that information, such as that on the Record of Emergency Data Form, is complete and up to date. And be sure the same is true of your Annual Qualification Questionnaire (AQQ).

If you find a cross-reference sheet in your record indicating that there is some pertinent classified correspondence involved and you want to review it, or if there's anything you want to check, the receptionist will direct you to an appropriate authority.

MISCELLANY

DISTRICT BULLETIN 1650

Subj: Meritorious Mast Awarded to Hospital Corpsman First Class Brody

Hospital Corpsman First Class Bernard Brody, 3672200/8445/8404, U. S. Navy is commended by the Director, First Marine Corps District as follows:

"It has been brought to my attention that you are a dedicated, knowledgeable, and a highly competent Hospital Corpsman, who administers to the minor aches, ailments and injuries of nearly 800 Marine reservists at their monthly drills and to 17 regular Marines on a full time basis. That your outstanding professional poise is accented by rapid application of the proper treatment to the sick or injured. Your compassionate and understanding manner and firm, but gentle, techniques personify the image of a man dedicated to the care and healing of others. Further, you are responsible for the nearly overwhelming administrative burden that the proper maintenance of nearly 800 health records can cause. The results of the Inspector-General Inspection in 1962 and again in 1964, with respect to medical matters, were worthy of high praise, as have been the annual District Inspections. You have shown an appreciation for reserve training time and effected liaison with U.S. Army Medical authorities to secure the use of a gun-type immunization device for mass immunization of unit personnel, resulting in time saved by this technique being measured, not in minutes, but in hours. Also, by your own efforts you have recruited three reserve hospital corpsmen and were directly responsible for the joining of three Medical Officers. In matters of Naval and Naval Reserve administration, policy, or custom, you have ensured that the 6th Communication Battalion, Force Troops, FMF, USMCR, Naval and Marine Corps Reserve Training Center, Fort Schuyler, Bronx, New York is always correct and proper. You are always willing to share your knowledge and experience by conducting first aid and rescue technique instructions for local Boy Scout Troops, the YMCA and for a nearby volunteer fire department, using the very latest methods. At the request of local police, you recently rendered emergency aid to a seriously injured child victim of a bus mishap, easing the child's pain, calming him, and making him comfortable until an ambulance arrived. Your contribution to the Marine Corps Reserve "Toys for Tots" drive is praiseworthy by voluntarily receiving instruction in the operation of heavy trucks, so as to be available for driver service, accepting responsibility for sorting and distribution for the 1963 "Toys for Tots" drive and by skillfully directing the efforts of reserve workers, thereby lending your every assistance to ensure a successful program. You are a positive indication of the close mutual ties that exist between Sailors and Marines and are extremely well qualified and deserving of recognition for your outstanding efforts and devotion in behalf of our Corps, and a credit to the Naval Service.

SEMINAR ON LEPROSY FOR MILITARY DERMATOLOGISTS

The U.S. Public Health Service under the direction of Dr. Edgar B. Johnwick conducted a Seminar on Leprosy for Military Dermatologists at the U.S. Public Health Service Hospital, Carville, Louisiana from 16-18 November 1964. There were 10 Navy medical officers in attendance:

CAPT S. L. Moschella, MC USN, USNH Phila., Pa.

CAPT C. E. Kee, MC USN, USNH San Diego, Calif.

CDR F. G. Osborne Jr., MC USN, USNH Beaufort, South Carolina

LCDR R. G. Davis MC USN, USNH Great Lakes, Ill.

LCDR G. E. Donnell, MC USN, USNH Bethesda, Md.

LCDR W. M. Narva, MC USN, USNH San Diego, Calif.

LCDR K. A. Gill, MC USN, USNH Camp Lejeune, N. C.

LCDR C. F. Payne Jr., MC USN, USNH Phila., Pa.

LT A. Ventzek, USNH Jacksonville, Florida.

LT D. Chapman, USNH Jacksonville, Florida.

Capt. R. K. Brooks, D.M.O., 8th Naval District handled the physical aspects of the program—the total transportation, quartering and social activities.

—Submitted by CAPT S. L. Moschella, MC USN, Chief of Dermatology, U. S. Naval Hospital, Phila., Pa.

SON FOLLOWS IN FATHER'S SECOND MOS

Marine Corps Schools, Quantico, Va., Dec. 16—Consequence of Familiarity—Newly-commissioned Second Lieutenant Gregory M. Donabedian watched as his father, Captain George Donabedian, MC USN, admired the gold bar placed on his son's uniform.

LT Donabedian was among 274 members of the 36th Officer Candidate Class that were commissioned Dec. 11, at Marine Corps Schools, Quantico, Va., climaxing 11 weeks of intensive training that began in September. To LT Donabedian, becoming a Marine is not a coincidence. His father, Staff Medical Officer for Headquarters Marine Corps, has served on active duty for more than 22 years, all with the Corps, including Guadalcanal, Tinian, Okinawa, Japan and Korea. He wears four personal combat decorations, along with nine campaign and service medals, and has been awarded seven personal commendations, including a Letter of Appreciation from the President of the Korean Medical Association.—By SSGT. R. Jarrell, Jr., Official U.S. Marine Corps Release, Informational Services Office, Marine Corps Schools, Quantico, Va.

INDOCTRINATION TOUR FOR INTERNS

On 12 and 13 November 1964, the combined Medical and Dental Intern Group from the U.S. Naval Hospital, St. Albans, New York, toured various neighboring activities in an indoctrination tour covering various aspects of operational medicine. The tour was directed by CAPT D. C. Kent, MC USN, Director of Interns, of that hospital.

The various aspects of submarine and underwater medicine were presented by CAPT C. L. Waite and his staff of the Submarine Medical Center, New London, Connecticut. In addition to a presentation covering the broad subject of underwater medicine, the group toured the atomic submarine, the USS Dace, the escape tank, and viewed the recently completed film on "Operation Sea Laboratory."

CAPT R. H. Lemmon and his staff of ComCruDes Lnt discussed the various responsibilities of the Medical Officer assigned to shipboard duty, with emphasis on the problems thereby encountered. Visits were made to a Destroyer and Destroyer Tender to visualize the problems of the Medical Officer afloat.

The War Gaming Department of the U.S. Naval War College, Newport, Rhode Island, presented a graphic demonstration of the use of the Naval Electronic Warfare Simulator, the demonstration included a short tactical demonstration of the potentials of the Simulator.

The tour was completed by a visit to the Station Hospital, U.S. Naval Air Station, Quonset Point, Rhode Island, as well as a tour through the Overhaul and Repair Facility of that activity. The various aspects of Aviation Medicine were presented by CAPT M. D. Courtney and his staff, including a high altitude simulation in the low pressure chamber, with demonstration of the effects of altitude on the human subject and the use of the oxygen demand system of the Navy. In addition, the problems of Industrial Medicine in Activities such as Quonset Point were discussed.

The tour was enthusiastically received by all Interns who expressed, upon its completion, a development of a more oriented attitude toward the problems of Naval Medicine. One of the rather surprising facts about this tour was the interest and enthusiasm expressed by the Line Officers over this type of indoctrination for our young medical officers.—Submitted by CO, USNH, St. Albans, N. Y.

NOTICE CONCERNING WEARING OF THE UNIFORM

Members of the Navy Medical Corps attending interservice symposia, courses, classes, etc., are reminded that the wearing of our uniform is most desirable. This also applies to officers in attendance at other large conferences and conventions where attendees are present on orders or by virtue of public funds. During

certain aspects of said gatherings, the uniform is perhaps inappropriate but otherwise the proper wearing of the uniform is encouraged.—RADM H. H. Eighmy MC USN, Asst Chief for Personnel & Professional Operations, BUMED.

CAPT MONAHAN RECEIVES PLAQUE FOR NAVY NURSE CORPS

On 29 October 1964, Captain Dorothy P. Monahan, NC, USN represented the Director of the Navy Nurse Corps and accepted a plaque from the Philadelphia Ladies Auxiliary, Jewish War Veterans of America. The plaque was a tribute to the Navy Nurse Corps in recognition of dedicated service of all members to country and humanity. CAPT Monahan was personally honored by being awarded the Distinguished Service Award by the Chapel of Four Chaplains.—Nursing Division, BUMED.

FREEDOMS FOUNDATION ANNOUNCES LETTER WRITING WINNERS

Washington, Jan. 3(AFPS)—The top winners from each of the services in the 1964 Freedoms Foundation Letter Writing Contest will appear in the Presidential Inauguration here Jan 20.

Staff Sergeant Carl E. Carr USAF, Chanute AFB, Ill., has been named overall winner and will receive the $1,000 first prize and a George Washington Honor Medal for his letter.

Other top winners are: LCOL Arnold F. W. Frank USA, Camp San Luis Obispo, Calif.; LT John W. Margedant USN, NAS, Pensacola, Fla.; Major Robert H. Durning USMC, Marine Corps Reserve Training Center, Chicago, Ill.; and Cadet First Class Joseph R. Offutt Jr., USCG Academy, New London, Conn. The Army, Navy and Marine Corps winners will each receive $100 and a George Washington Honor Medal. The Coast Guard winner will receive only the Honor Medal.

Other winners will be announced on Washington's Birthday.—AFPS News Release, January 3, 1965.

ANNUAL AFIP LECTURES

Washington, D.C. Officials of the Armed Forces Institute of Pathology announced today that the Annual AFIP Lectures will be held at the Institute March 29-April 2, 1965.

The lectures cover the various organ and body systems and will include discussions of the common pitfalls in diagnosis, a review of articles published or to be published by staff members of the AFIP, new advances in histologic techniques, and application of newer histochemical, bacteriological, biochemical, immunological and toxicological methods in the daily practice of pathology.

The course will give the busy practicing pathologist a concise period of review representing the latest concepts in pathology.

Inquiries concerning the course, which is open to pathologists, should be sent to: The Director, Armed Forces Institute of Pathology, ATTN: Department of Pathology, Washington, D.C. 20305.—AFIP Technical Liaison Office.

In Memoriam

RADM William T. Lineberry MC USN (Ret)	22 November	1964
RADM Edward S. Lowe MC USN (Ret)	15 October	1964
CAPT Howard B. Haisch DC USN	18 November	1964
CAPT James F. Hays MC USN (Ret)	18 December	1964
CAPT Deane H. Vance MC USN (Ret)	27 November	1964
CDR Leonard H. Denny MC USN (Ret)	7 December	1964
CDR Richard W. Hughes, Sr. MC USN (Ret)	13 October	1964
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CDR Eugene L. Walter DC USN (Ret)	28 November	1964
LCDR Marguerite L. Durmwald USN (Ret)	12 November	1964
LCDR Hayden D. Palmer, Jr. MC USN	21 October	1964
LT John J. Vizard MSC USN (Ret)	4 November	1964
ENS Racheal K. Mytenger USN	28 November	1964
Chief Nurse Ruby Russell NC USN (Ret)	24 November	1964
CMSW W-2 Ray W. Chiles USNR (Ret)	16 October	1964
Kathleen Young (Dependent Daughter)	16 October	1964

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